

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A color image processing method for converting a first color signal including three variables into a second color signal including N variables, where N is an integer, which is not smaller than ~~four~~five, the color image processing method comprising:

a first conversion of determining (N-3) variables of the second color signal from the first color signal; and

a second conversion of determining the remaining three variables of the second color signal on the basis of the determined (N-3) variables of the second color signal and the first color signal so that the second color signal is colorimetrically equal to the first color signal.

2. (Original) The color image processing method according to claim 1, wherein:
the second conversion includes solving a function of the second color signal, which indicates a relation between the second color signal and a device-independent color signal on color system coordinates corresponding to the second color signal, with using the first color signal and the determined (N-3) variables of the second color signal as an input.

3. (Currently Amended) The color image processing method according to claim 1, wherein:

5 < N < 7, and

the N variables of the second color signal ~~includes~~include:

four variables indicating yellow, magenta, cyan, and black; and

at least one ~~of three variables~~variable indicating one of red, green, and blue.

4. (Currently Amended) The color image processing method according to claim 1, wherein:

5 < N < 7;

the (N-3) variables of the second color signal determined in the first conversion include:

a variable indicating black; and

at least ~~two of four variables~~ one variable indicating one of red, green, and blue; and

the three variables determined in the second conversion ~~include three variables~~ indicating indicate yellow, magenta, and cyan.

5. (Currently Amended) The color image processing method according to claim 1, ~~wherein~~ wherein:

the first conversion includes:

determining a UCR ratio concerning the (N-3) variables of the second color signal on the basis of the first color signal;

determining maximum and minimum values of each of the (N-3) variables of the second color signal, which is ~~inputtable in~~ are within a color gamut, on the basis of the first color signal; and

determining the (N-3) variables of the second color signal to be between the maximum and minimum values on the basis of the UCR ratio concerning the (N-3) variables of the second color signal and the maximum and minimum values.

6. (Currently Amended) The color image processing method according to claim 1, wherein:

the first conversion includes:

determining a UCR ratio concerning an achromatic component, a UCR ratio concerning a chromatic component, and three primary color signals, which represent the first color signal, on the basis of the first color signal; and

performing a UCR processing on the basis of the UCR ratio concerning the achromatic component, and at the UCR ~~ratio~~ ratio concerning at the chromatic ~~ratio~~ component to eliminate the achromatic component and the chromatic component from the three primary color signals, to thereby determine the (N-3) variables of the second color signal.

7. (Original) The color image processing method according to claim 6, wherein the three primary color signals indicate yellow, magenta, and cyan.

8. (Original) The color image processing method according to claim 1, wherein the first color signal is a $L^*a^*b^*$ color signal.

9. (Currently Amended) A color image processing apparatus for converting a first color signal including three variables into a second color signal including N variables, where N is an integer, which is not smaller than ~~four~~five, the color image processing apparatus comprising:

a first conversion unit for determining (N-3) variables of the second color signal from the first color signal; and

a second conversion unit for determining the remaining three variables of the second color signal on the basis of the determined (N-3) variables of the second color signal and the first color signal so that the second color signal is colorimetrically equal to the first color signal.

10. (Original) The color image processing method according to claim 9, wherein: the second conversion unit solves a function of the second color signal, which indicates a relation between the second color signal and a device-independent color signal on color system coordinates corresponding to the second color signal, using the first color signal and the determined (N-3) variables of the second color signal as an input.

11. (Currently Amended) The color image processing apparatus according to claim 9, wherein:

5 < N < 7, and

the N variables of the second color signal ~~includes~~include:

four variables indicating yellow, magenta, cyan, and black; and

at least one of ~~three variables~~variable indicating one of red, green, and blue.

12. (Currently Amended) The color image processing apparatus according to claim 9, wherein:

5 < N < 7;

the (N-3) variables of the second color signal determined by the first conversion unit ~~includes~~include:

a variable indicating black; and

at least ~~two of four variables~~ one variable indicating one of red, green, and blue; and

the three variables determined by the second conversion unit ~~includes three variables~~ indicating yellow, magenta, and cyan.

13. (Currently Amended) The color image processing apparatus according to claim 9, wherein:

the first conversion unit:

determines a UCR ratio concerning the (N-3) variables of the second color signal on the basis of the first color signal;

determines maximum and minimum values of each of the (N-3) variables of the second color signal, which is ~~inputtable in~~ are within a color gamut, on the basis of the first color signal; and

determines the (N-3) variables of the second color signal to be between the maximum and minimum values on the basis of the UCR ratio concerning the (N-3) variables of the second color signal and the maximum and minimum values.

14. (Currently Amended) The color image processing apparatus according to claim 9, wherein:

the first conversion unit:

determines a UCR ratio concerning an achromatic component, a UCR ratio concerning a chromatic component, and three primary color signals, which represent the first color signal, on the basis of the first color signal; and

performs a UCR processing on the basis of the UCR ratio concerning the achromatic component and the UCR ratio concerning the chromatic ~~ratio~~component to eliminate the achromatic component and the chromatic component from the three primary color signals, to thereby determine the (N-3) variables of the second color signal.

15. (Original) The color image processing apparatus according to claim 14, wherein the three primary color signals indicate yellow, magenta, and cyan.

16. (Original) The color image processing apparatus according to claim 9, wherein the first color signal is an L*a*b* color signal.

17. (Currently Amended) A method for producing a direct look-up table used in converting a first color signal including three variables into a second color signal including N variables, where N is an integer, which is not smaller than ~~four~~five, the method comprising:

preparing a plurality of first color signals;

determining (N-3) variables of each ~~of~~ second color ~~signal~~signal from ~~each of each~~ corresponding first color ~~signal~~signal;

determining the remaining three variables of each ~~of~~ second color ~~signal~~signal on the basis of the determined (N-3) variables of each ~~of~~ second color ~~signal~~signal and ~~each of each~~ corresponding first color ~~signal~~signal so that each ~~of~~ second color ~~signal~~signal is colorimetrically equal to each ~~of~~ corresponding first color ~~signal~~signal; and

forming the direct look-up table using corresponding pairs of the first color signals and the determined second color signals.

18. (Currently Amended) A color image processing program causing a computer to perform a process for converting a first color signal including three variables into a second color signal including N variables, where N is an integer, which is not smaller than ~~four~~five, the process comprising:

a first conversion of determining (N-3) variables of the second color signal from the first color signal; and

a second conversion of determining the remaining three variables of the second color signal on the basis of the determined (N-3) variables of the second color signal and the first color signal so that the second color signal is colorimetrically equal to the first color signal.

19. (Currently Amended) A computer-readable recording medium storing a color image processing program causing a computer to perform a process for converting a first color signal including three variables into a second color signal including N variables, where N is an integer, which is not smaller than ~~four~~five, the process comprising:

a first conversion of determining (N-3) variables of the second color signal from the first color signal; and

a second conversion of determining the remaining three variables of the second color signal on the basis of the determined (N-3) variables of the second color signal and the first color signal so that the second color signal is colorimetrically equal to the first color signal.